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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,689	10/23/2003	Thomas W. Wing	WINGT-010A	6606

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EXAMINER

NG, EUNICE

ART UNIT	PAPER NUMBER
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2626

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.		Applicant(s)	
	10/691,689		WING, THOMAS W.	
	Examiner		Art Unit	
	Eunice Ng		2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 1, 6, 7, 20, 22 and 25 are objected to because it contains language in the form of intended use which itself has not been recited.

In claim 1, the examiner has interpreted “configured to be engaged” (line 3) as --engaged--; and “being operative to reduce” (line 9) as --reduces-- and “being operative to reconvert” (lines 11-12) as --reconverts--.

In claims 6 and 7, the examiner has interpreted “is operative to convert” (line 2) as --converts--.

In claim 20, the examiner has interpreted “configured to be engaged” (line 3) as --engaged--; “being operative to receive” (line 12) as --receives--; and “being operative to transmit” (lines 14-15) as --transmits--.

In claim 22, the examiner has interpreted “configured to visually display” as --visually displays--.

In claim 25, the examiner has interpreted “is operative to record” (line 2) as --records--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States,

3. Claims 20, 21, 25-27, 29, 30, and 34-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Rueda, US Patent 6,157,727.

Regarding claim 20, Rueda teaches a hearing aid for increasing recognition of a sound in an ear, the hearing aid comprising:

a body member sized and [engaged] to the ear (col. 2, ll. 27-29, “the hearing aid is worn at the ear of the user”; col. 3, ll. 7-8, “ear of the hearing aid wearer via an earpiece”);

a microphone engaged to the body member for receiving the sound (Figure, element 2; col. 2, line 64 – col. 3, line 11, “microphone”);

a receiver engaged to the body member for reproducing a substituted sound in the ear (Figure, element 5; col. 2, line 64 – col. 3, line 11, “emitted as acoustical signals to the ear of the hearing aid wearer via an earpiece 5”); and

a control unit located externally from the body member and being in wireless communication with the microphone and the receiver thereof, the control unit [receives] the sound wirelessly from the microphone to process the sound into the substituted sound, the control unit further [transmits] the substituted sound wirelessly to the receiver for reproducing the substituted sound in the ear and increase the recognition of the sound in the ear (see Figure, element 14, “translation system,” including speech recognition and analysis 15, and speech processing unit 16; element 17, “bidirectional data transmission connection”; col. 2, ll. 35-38, “Wireless data transmission”; and col. 3, ll. 20-28).

Regarding claim 29, Rueda teaches a method of increasing recognition of a sound in an ear with a hearing aid, the method comprising the steps of:

engaging a body member of the hearing aid to the ear (col. 2, ll. 27-29, “the hearing aid is worn at the ear of the user”; col. 3, ll. 7-8, “ear of the hearing aid wearer via an earpiece”);

receiving the sound with the microphone of the hearing aid (col. 2, ll. 1-20, “speech recognition and speech processing unit...acoustical speech signals received by the input transducer...microphone...of the hearing aid”);

transmitting the sound wirelessly from the microphone to the control unit of the hearing aid (Figure, element 14, “translation system,” including speech recognition and analysis 15, and speech processing unit 16; element 17, “bidirectional data transmission connection”; col. 2, ll. 35-38, “Wireless data transmission”; and col. 3, ll. 20-28);

processing the sound into a substituted sound with the control unit (Figure, element 16, “speech processing unit”; abstract, “signals received by the input transducer in a first language can be supplied to the translation system wherein those signals are converted into speech signals in a second language [substituted sound]”);

transmitting the substituted sound wirelessly from the control unit to the receiver of the hearing aid (Figure, element 14, “translation system,” including speech recognition and analysis 15, and speech processing unit 16; element 17, “bidirectional data transmission connection”; col. 2, ll. 35-38, “Wireless data transmission”; and col. 3, ll. 20-28); and

reproducing the substituted sound in the ear to increase the recognition of the sound in the ear (Figure, element 5; col. 2, line 64 – col. 3, line 11, “emitted as acoustical signals to the ear of the hearing aid wearer via an earpiece 5”).

Regarding claims 21 and 30, Rueda teaches wherein the hearing aid is a digital hearing aid (col. 2, ll. 65-66, “digital hearing aid”).

Regarding claims 25 and 34, Rueda teaches wherein the control unit [records] the sound received from the microphone (col. 3, ll. 24-28, “speech recognition unit for speech analysis of the incoming speech signals and a speech processing unit,” the sounds received from the microphone are necessarily recorded for speech recognition and processing; Figure, element 6, signal processing circuit with memory).

Regarding claims 26 and 35, Rueda teaches wherein the control unit comprises a sound processor for processing the sound into the substituted sound (Figure, element 16, “speech processing unit”; abstract, “signals received by the input transducer in a first language can be supplied to the translation system wherein those signals are converted into speech signals in a second language [substituted sound]”).

Regarding claims 27 and 36, Rueda teaches wherein the control unit comprises a translation software for translating the sound into the substituted sound of a selected language (Figure, element 16, “speech processing unit”; abstract, “signals received by the input transducer in a first language can be supplied to the translation system wherein those signals are converted into speech signals in a second language”; col. 1; ll. 57-67, “selectable second language...selected, second language”).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-7, 9-19, 28 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rueda, US Patent 6,157,727 in view of Lafon et al. ("Lafon"), US Patent 4,843,623.

Regarding claims 1 and 11, Rueda teaches a method of increasing recognition of a sound in an ear with a hearing aid, the hearing aid having a microphone, a microchip and a receiver (abstract and Figure), the method comprising the steps of:

engaging a body member of the hearing aid to the ear (col. 2, ll. 27-29, "the hearing aid is worn at the ear of the user"; col. 3, ll. 7-8, "ear of the hearing aid wearer via an earpiece");

receiving an analog signal defining the sound with the microphone of the hearing aid (col. 2, ll. 1-20, "speech recognition and speech processing unit...acoustical speech signals received by the input transducer...microphone...of the hearing aid"; speech is necessarily analog);

converting the analog signal from the microphone into a digital signal with the microchip of the hearing aid (col. 1, ll. 14-24, "Hearing aids...equipped with digital or analog signal processing circuitry [microchip]...digital signal processor"; col. 2, ll. 1-20, "speech recognition and speech processing unit [A/D]...microphone...transduced into electrical signals...signal processing circuit"); and

reconverting the digital signal back into the analog signal with the microchip (col. 3, ll. 4-11, “signals...emitted as acoustical signals to the ear of the hearing aid wearer via an earpiece,” speech synthesis [D/A]).

Rueda fails to teach, but Lafon teaches: reducing a frequency of the digital signal below a prescribed frequency level with the microchip; and delivering the analog signal below the prescribed frequency level into the ear with the receiver of the hearing aid so as to increase the recognition of the sound in the ear (abstract, Lafon teaches hearing aid devices in which high frequency signal portions are transposed in low frequency compensation signal portions; col. 3, ll. 11-16, teaches “a band-pass filter allowing passage of all the portion S_o of said signal E whose frequency is comprised between a first very low frequency...and a second frequency F_{omax} which depends on the degree of deafness to be treated and which is generally comprised between 500 and 1200 Hz”).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the teaching elements of Rueda with Lafon in cases of severe deafness in which the deaf person is only able to detect sounds whose frequency is less than 1200 Hz, as described by Lafon (col. 4, ll. 23-29).

Regarding claims 2 and 12, Rueda teaches an amplifier for amplifying the electrical signals of the input transducer (col. 1, ll. 9-11 and col. 2, ll. 7-9). Rueda does not explicitly teach, but Lafon teaches an amplifier, comprising the step of amplifying the analog signal below the prescribed frequency level with the amplifier (col. 3, line 62 – col. 4, line 16, “compensation signals...may be amplified”). It would have been obvious for one of ordinary skill in the art at the

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time the invention was made to modify the teaching elements of Rueda with Lafon “so as to take into account the fact that the range of low frequencies which defines the band of filtering of each of them extends over only a small portion of the whole of the acoustic spectrum,” as described by Lafon (col. 3, ll. 62-68).

Regarding claims 3 and 13, Rueda teaches the step of providing power to the hearing aid with the battery (col. 3, ll. 10-11, “battery...serves for the power supply of the hearing aid”).

Regarding claims 4 and 14, Rueda teaches fitting the body member within the ear (col. 2, ll. 27-28, “hearing aid is worn at the ear of the user (ITE or BTE),” ITE being In-the-Ear instruments which fits into the cradle portion of the ear).

Regarding claims 5 and 15, Rueda teaches wearing the body member around the ear (col. 2, ll. 27-28, “hearing aid is worn at the ear of the user (ITE or BTE),” BTE being Behind-the-Ear hearing instruments which are worn behind the ear and are connected to a plastic earmold that fits inside the outer ear).

Regarding claims 6 and 16, Rueda teaches converting the sound into the analog signal with the microphone (col. 1, ll. 14-24, “Hearing aids...equipped with digital or analog signal processing circuitry”; col. 2, ll. 1-20, “speech recognition and speech processing unit [A/D]...microphone...transduced into electrical signals...signal processing circuit”).

Regarding claims 7 and 17, Rueda teaches converting the analog signal into the digital signal with the microchip through digitized sound processing aid (col. 1, ll. 14-24, “Hearing aids...equipped with digital or analog signal processing circuitry...digital signal processor [digitized sound processing aid]”; col. 2, ll. 1-20, “speech recognition and speech processing unit [A/D]...microphone...transduced into electrical signals...signal processing circuit”).

Regarding claims 9 and 18, Rueda suggests programming the microchip via a software of a computer for reducing the frequency of the digital signal below the prescribed frequency level (col. 1, ll. 16-24, “details of the acoustical processing can be modified by modifying the program stored in the memory...to perform an adjustment to optimize the speech intelligibility for an individual patient”).

Regarding claims 10, 19, 28 and 37, Rueda does not, but Lafon teaches reducing the frequency of the digital signal below about 1200 hertz and wherein the substituted sound has a frequency below about 1200 hertz (col. 3, ll. 11-16, teaches “a band-pass filter allowing passage of all the portion S_o of said signal E whose frequency is comprised between a first very low frequency...and a second frequency F_{omax} which depends on the degree of deafness to be treated and which is generally comprised between 500 and 1200 Hz”).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the teaching elements of Rueda with Lafon in cases of severe deafness in which the deaf person is only able to detect sounds whose frequency is less than 1200 Hz, as described by Lafon (col. 4, ll. 23-29).

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rueda in view of Lafon et al., and further in view of Barcy et al. ("Barcy"), US Patent 6,542,200.

Rueda and Lafon does not explicitly teaches wherein the microchip analyzes and filters the digital signal of the voice apart from a background noise. However, this feature is old and well known in the art as evidenced by Barcy, which teaches in col. 3, ll. 14-19, "audio signal is then sent to one or more audio filters...filter out all non-human speech sounds...alleviate...noise"). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the teaching elements of Rueda and Lafon with Barcy because this would allow for greater accuracy and reliability of the translations.

7. Claims 22, 24, 31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rueda in view of Barcy et al. ("Barcy"), US Patent 6,542,200.

Regarding claims 22 and 31, Rueda teaches in col. 1, ll. 25-32, "hearing aids are equipped with a telephone coil or induction coil...communication system for hearing aid users for use in connection with a mobile telephone [hand-held electronic device having a visual screen]." Rueda does not explicitly teach, but Barcy teaches wherein the control unit is further in communication with a hand-held electronic device having a visual screen, the visual screen being sized and [visually displays] the sound received by the microphone as a word (abstract, "hearing impaired...audio voice signals into a text format...microphone...remote displays, wireless or wired...providing the text format representative of human speech").

Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the teaching elements of Rueda with Barcy to provide a screen for visually displaying the sound received by the microphone as a word in order to provide a small, portable device that allows hearing impaired individuals to participate in different environments, as described by Barcy (col. 1, ll. 29-50).

Regarding claims 24 and 33, Rueda teaches wherein the hand-held device is a cellular phone (col. 1, ll. 25-32, “communication system for hearing aid users for use in connection with a mobile [cellular] telephone”).

8. Claims 23 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rueda in view of Barcy et al., and further in view of Kraemer et al. (“Kraemer”), US Patent Pub. 2003/0065504.

Rueda teaches wherein the hand-held device is a cellular phone. Barcy teaches a hand-held device with a visual display. Rueda and Barcy do not explicitly teach wherein the hand-held device is a personal digital assistant. However, this feature would have been obvious given the teaching elements of Kraemer, which teaches an instant verbal translator, wherein the “processor and the associated processing capabilities may also be provided in...Personal Data Assistants (PDA)”; and paragraphs 29-30, “output device...audible signal...earpiece...one configured as a hearing aid.”

It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the teaching elements of Rueda and Barcy with Kraemer to communicate with a personal digital assistant because PDAs constitute readily available technology.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Rondel et al. (US 4,984,177), voice language translator.

Sauer (US 5,636,285), voice-controlled hearing aid.

Greene, Jr. et al. (US 6,377,925), electronic translator for assisting communications.

Leonhard (US 5,884,260), method and system for detecting and generating transient conditions in auditory signals.

Allegro et al. (US 6,910,013), method for identifying a momentary acoustic scene, application of said method, and hearing device.

Tanaka et al. (US 5,963,892), translation apparatus and method for facilitating speech input operation and obtaining correct translation thereof.

Anderson (US 5,721,783), hearing aid with wireless remote processor.

Shennib (US 5,425,104), inconspicuous communication method utilizing remote electromagnetic drive.

Van Alstine (US 6,175,819), translating telephone.

Valley et al. (US 4,259,547), hearing aid with dual pickup.

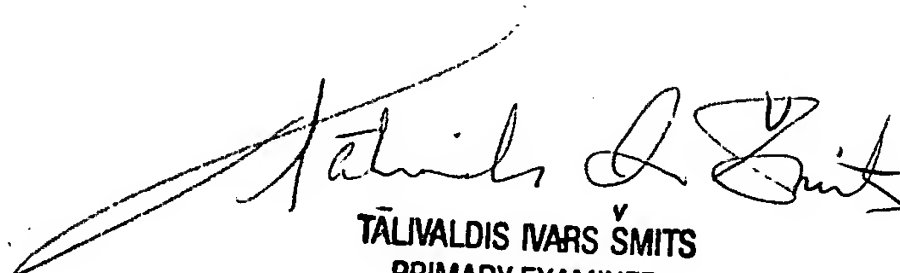
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eunice Ng whose telephone number is 571-272-2854. The examiner can normally be reached on Monday through Friday, 8:30 a.m. - 5:00 p.m.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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PRIMARY EXAMINER